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## GIET MAIN CAMPUS AUTONOMOUS GUNUPUR – 765022

B. Tech Degree Examinations, December – 2020

(Fifth Semester)

**BMEPC5020 – MACHINING SCIENCE AND TECHNOLOGY**

(Mechanical Engineering)

Time: 2 hrs

Maximum: 50 Marks

**The figures in the right-hand margin indicate marks.****PART – A: (Multiple Choice Questions)****(1 x 10 = 10 Marks)****Q.1. Answer ALL questions****[CO#] [PO#]**

- |   |  |     |
|---|--|-----|
| a. A cutting tool can never have its  |  |     |
| (i) rake angle – positive   | (ii) rake angle – negative                   | 1 1 |
| (iii) clearance angle – positive  | (iv) clearance angle – negative              |     |
| b. Inclination angle of a turning tool is measured on its                       |  | 1 1 |
| (i) reference plane   | (ii) cutting plane                           |     |
| (iii) orthogonal plane  | (iv) normal plane                            |     |
| c. Size of shaper is given by   |  | 3 1 |
| (i) Stroke length   | (ii) Motor power                             |     |
| (iii) Weight of the machine   | (iii) Table size                             |     |
| d. The rake angle in a drill  |  | 2 1 |
| (i) Increases from center to periphery  | (ii) Decreases from center to periphery      |     |
| (iii) Remains constant  | (iv) Is irrelevant to the drilling operation |     |
| e. In machine tools, chatter is due to.....                                     |  | 2 2 |
| (i) Free vibrations   | (ii) Random vibrations                       |     |
| (iii) Forced vibrations   | (iv) Self-excited vibrations                 |     |
| f. The indexing operation can also be adapted for producing _____ headed bolts. |  | 3 2 |
| (i) hexagonal   | (ii) square                                  |     |
| (iii) both hexagonal and square   | (iv) none of the mentioned                   |     |
| g. Which of the following lathe requires very high skills for operation?        |  | 3 2 |
| (i) Centre lathe  | (ii) Capstan lathe                           |     |
| (iii) Turret lathe  | (iv) All of the mentioned                    |     |
| h. Hobbing process is also used for which of the following application?         |  | 2 2 |
| (i) Punching  | (ii) Metal bending                           |     |
| (iii) Rust removal  | (iv) Sprocket cutting                        |     |
| i. Frequency of tool's oscillation in USM ranges between _____                  |  | 4 2 |
| (i) 5-10 kHz  | (ii) 10-15 kHz                               |     |
| (iii) 18-20 kHz   | (iv) 25-50 kHz                               |     |
| j. By using EDM, how much percentage of machining costs can be reduced?         |  | 4 2 |
| (i) 10 %  | (ii) 20 %                                    |     |
| (iii) 30 %  | (iv) 50 %                                    |     |

**PART – B: (Short Answer Questions)****(2 x 5 = 10 Marks)**

<u>Q.2. Answer ALL questions</u>	[CO#]	[PO#]
a. What is meant by orthogonal cutting and oblique cutting?	1	1
b. What are the situation where diamonds are used as cutting tool?	1	1
c. Why grey cast iron does not need any lubrication during machining?	2	1
d. Differentiate between up milling and down milling.	3	2
e. What are the functions served by the dielectric fluid in EDM?	4	2

**PART – C: (Long Answer Questions)****(6 x 5 = 30 Marks)**

<u>Answer ANY FIVE questions</u>	Marks	[CO#]	[PO#]
3. What is the tool life equation and state the factor affecting the tool life.	(6)	1	1
4. What is chip? Explain different types of chips produced during formation?	(6)	1	1
5. Explain the various taper turning methods?	(6)	1	1
6. Explain the construction and working principle of a lathe with a sketch	(6)	1	1
7. Explain the principle of gear hobbing with neat sketches.	(6)	2	2
8. Discuss about capstan and turret lathe.	(6)	2	2
9. Draw the Schematic sketch of Abrasive Jet machining system and discuss.	(6)	3	3
10. Discuss with neat sketch the Working principle of Ultrasonic Machining	(6)	3	3

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